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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,416	03/30/2004	Tetsuzo Ueda	43890-673	1264

7590 10/05/2007
MCDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

ARENA, ANDREW OWENS

ART UNIT	PAPER NUMBER
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2811

MAIL DATE	DELIVERY MODE
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10/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/812,416

Applicant(s)

UEDA ET AL.

Examiner

Andrew O. Arena

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5 and 51-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 3, 5, and 51-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

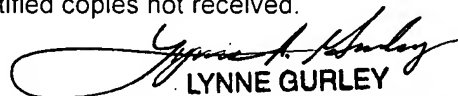
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


LYNNE GURLEY
SUPERVISORY PATENT EXAMINER
AU 2811, TC 2800

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 2, 3, 5, and 51 are rejected under 35 U.S.C. 102(a) as being anticipated by Onojima (Appl. Phys. Lett., Vol. 83, No. 25, Dec 22, 2003).

RE claim 51, Onojima discloses a semiconductor device (pg 5210 col 2 ln 13-16) comprising a III-V Nitride semiconductor epitaxial film having 4H-polytype structure formed in contact with a substrate having 4H-[poly]type structure (pg 5210 col 2 ln 1-4), wherein the III-V Nitride semiconductor epitaxial film is a 4H-AIN film (e.g. title).

RE claim 2, Onojima discloses the substrate is silicon carbide (SiC, e.g., title).

RE claim 3, Onojima discloses said III-V Nitride semiconductor epitaxial film is formed in contact with a substrate having (11-20) face (pg 5210 col 2 ln 3).

RE claim 5, Onojima discloses a number of group III atoms are equal to a number of nitrogen atoms on a surface of said III-V Nitride semiconductor epitaxial film. Onojima discloses same composition; claimed property inherent. MPEP § 2112.01(II).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a):

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 52-57 are rejected under 35 U.S.C. 103(a) as being obvious in view of Inoguchi (US 5,900,647) and Onojima (Appl. Phys. Lett., Vol. 83, No. 25, Dec 22, 2003).

RE claim 52, Inoguchi discloses an optoelectronic device (Fig 4, col 8 ln 28-33) comprising,

a III-V Nitride semiconductor epitaxial film (23-26; col 8 ln 53-58) formed in contact with a substrate (21) having 4-H type structure (col 10 ln 36-38); and

a waveguide (31; col 9 ln 44, col 8 ln 20) formed on said III-V Nitride semiconductor epitaxial film,

wherein the III-V Nitride semiconductor film is an AlN film (e.g., col 8 ln 63), and said III-V Nitride semiconductor epitaxial film includes an n-type layer (23; col 8 ln 59), a p-type layer (26; col 9 ln 10) and an active layer (25; col 9 ln 4-5), said active layer being formed between said n-type layer and said p-type layer.

Inoguchi differs from the claimed invention only in not expressly disclosing the polytype of said III-V Nitride semiconductor epitaxial film.

Onojima teaches that high-performance devices may be realized with 4H-AlN on 4H-SiC substrates (e.g., pg 5210 col 2 ln 13-16) and further teaches such arrangements are desirable in the art due to certain appreciated advantages (pg 5208 col 1 ln 1-4).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that said III-V Nitride semiconductor epitaxial film is a 4H-AlN film; at least for the advantages of such arrangement. Also MPEP § 2144.06-2144.07.

RE claim 53, Inoguchi discloses a plurality of layers (23-26) are disposed between said waveguide (31) and said substrate (21).

RE claim 54, Inoguchi discloses said substrate having 4H [poly]type structure is SiC (col 10 ln 36-38).

RE claim 55, the combined teachings relied upon disclose said III-V Nitride semiconductor epitaxial film is formed in contact with a substrate having (11-20) face (Onojima: pg 5210 col 2 ln 3).

RE claim 56, the combined teachings relied upon disclose a number of group III atoms are equal to a number of nitrogen atoms on a surface of said III-V Nitride semiconductor epitaxial film. Onojima discloses same composition; claimed property inherent. MPEP § 2112.01(II).

RE claim 57, the combined teachings relied upon disclose said waveguide is formed as a straight line perpendicular to either (0001) face or (1-100) face (Inoguchi Fig 4 shows said stripe is perpendicular to the substrate face; the combination discloses the substrate face is (11-20), so the stripe must be perpendicular to either claimed face, since they are the two remaining axes, e.g. Onojima Fig 3 or applicant's Fig 2-4).

Response to Arguments

Applicant's arguments filed 07/13/2007 have been fully considered but they are not persuasive.

The arguments that "Onojima fails to disclose a semiconductor device comprising a III-V Nitride semiconductor epitaxial film having 4H-polytype structure" (pg 5 ln 1-2) is not persuasive. Said limitations are expressly taught at pg 5210 in column 2.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

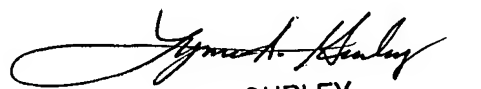
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is 571-272-5976. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571- 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from PAIR. See <http://pair-direct.uspto.gov>. For questions, call 866-217-9197. For a USPTO Customer Service Rep or the auto info system, call 800-786-9199 or 571-272-1000.



Andrew O. Arena
28 September 2007



LYNNE GURLEY
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